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A TRAINING-TASK PARADIGM TO MEET THE OPERATIONAL  
AND TRAINING NEEDS OF THE FUTURE ARMY

BY

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LTC Karl J. Gunzelman

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## ABSTRACT

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The post Cold War period has ushered in an military environment of uncertainty and ambiguity. The current Soviet threat based, training strategy, force development, tactics and weapons design system must adapt quickly to meet the challenges of a smaller, power projection military with a broader mission profile. Today's training strategy is still based on the training task paradigm of the early 1970s. Future training strategies will require a task paradigm that is joint-based and capable of training organizations across the spectrum of operations. This paper reviews the history of the Army's training task paradigms and recommends a future training task paradigm methodology based on a functional approach linked to the Army Universal Task List (AUTL).



## TABLE OF CONTENTS

INTRODUCTION.....	1
TRAINING THE FUTURE FORCE.....	2
FUTURE TRAINING STRATEGIES.....	4
TODAY'S TRAINING STRATEGY.....	4
RECENT EVELOPMENTS.....	8
CONCLUSION.....	20
RECOMMENDATIONS.....	22
ENDNOTES.....	25
SELECTED BIBLIOGRAPHY.....	29



## **Introduction**

The end of the Cold War brought with it considerable change. Transformation of the international environment changed the conditions upon which the military was organized, trained and equipped until 1989.<sup>1</sup> The services are no longer focused on defeating a Soviet-dominated, Warsaw Pact force in central Europe. They are struggling with a new set of evolving strategic missions and at the same time trying to capture an accurate understanding of the future threat, as well as the force structure required to face that threat. During the past eight years, the US Military has reduced its force structure, while at the same time embracing a national military strategy that places equal emphasis on promoting stability and thwarting aggression.<sup>2</sup> It is also trying to restructure itself, during a time of diminishing resources, to meet the challenges of the next century.<sup>3</sup>

Preparing the military for the next century will call for the continued accession and retention of high quality people. It will also require the integration of information-age technological advances, the exploitation of proven competencies, and a focus on developing joint capabilities.<sup>4</sup> The future success of our Armed Forces, as expressed in *Joint Vision 2010*, depends on training as well as quality people, first-rate equipment, leader development, and readiness.<sup>5</sup>

The Army, too, realizes that it must conduct most future operations in a joint environment. The Army's concept of the future, and the blueprint for its contributions to the operational concepts identified in *Joint Vision 2010*, are expressed in *Army Vision 2010*, placing the Army as the land component member of the joint warfighting team.<sup>6</sup> In order to meet future operational requirements, joint as well as Army, the Army recently

updated its requirements determination process. These future operational capabilities, however, remain focused on the various Army domains of training, doctrine, leader development, materiel, organizations and soldiers.<sup>7</sup>

### **Training the Future Force**

The ability to operate in the complex environment of today and tomorrow requires an agile force. One way the Army plans to provide agility is through increased specialization, with some units reconfiguring to implement more fully some of the concepts inherent in the revolution in military affairs (RMA). Other units will specialize to ensure a greater on-call capability to perform peace operations.<sup>8</sup> As force structure is reduced, however, and specialized units become less available, many units, especially those designed and trained for the high-end of the military-operations continuum, must take on non-traditional roles refocusing from war-fighting to peacekeeping.<sup>9</sup>

Because future operations are most likely to occur on the lower and middle portions of the continuum that ranges from disaster relief to regional or even global conflict, the significance of land forces is likely to increase. The intense manpower requirements associated with these operations will require the regional, unified commanders-in-chief (CINC) to always consider the Army the principal combatant. According to the Chief of Staff, Army, "land forces not only provide the most flexible and versatile capabilities for meeting the CINC force requirements, from humanitarian assistance to combat operations, but constitute the highest percentage of the committed joint force."<sup>10</sup>

In order to fully realize the flexible and versatile capabilities needed to accomplish the full range of future operation scenarios, the Army needs a strategy that produces a training component capable of supporting the future Army. The Army Training XXI (AT XXI) concept provides this strategy by integrating ongoing initiatives and future developmental efforts to produce a coherent, integrated training system to meet the needs of the future Army.<sup>11</sup> Warfighter XXI (WF XXI) is the component focused on collective and unit training. Warfighter XXI provides the vision and integrated plan for how the future Army will train battle staffs and collective tasks.<sup>12</sup>

Training the Army's future battle staffs and units requires the Army both to automate its training management, making the current system more efficient, and to develop new training strategies that break old paradigms and make the future force more effective. Thus, the two major initiatives used in the construct of WF XXI are training management automation and Combined Arms Training Strategies (CATS).<sup>13</sup> The five components of training management automation are well defined in OPORD 1-95, which provides a clear vision of what the automated systems will look like and how they will perform. In order to better define how future organizations will operate in any number of operational profiles, training strategies must evolve. Essential to both these initiatives are the tasks or task groupings (task paradigms) used to measure performance and hence readiness. Task paradigms will support commanders in improving the readiness of their units, and training developers, combat developers, and material developers in developing requirements for new equipment and systems.<sup>14</sup>

## **Future Training Strategies**

Meeting the Army's training needs for the future obliges the Army to break with the past. Current training strategies are based on the defunct Soviet Threat, and yet remain the foundation for current doctrine development. These strategies, although called Combined Arms Training Strategies, are in reality more proponent than combined-arms based. Moreover, these strategies are event driven; they attempt to integrate training events vertically among proponent unit echelons and horizontally across the combined arms and services team.<sup>15</sup> Warfighter XXI envisions future CATS as task-driven training strategies that group tasks functionally to integrate them into true combined-arms training.<sup>16</sup> While the Army pursues an integrated approach to training strategy development, current task paradigms are ill-suited for supporting true combined-arms training strategies. A review of the current training strategy and the associated task paradigms will help identify specific problems with training today.

## **Today's Training Strategy**

In order to understand how the Army trains today it is important to understand the roots of the Army's training system. Reviewing the genesis of the training system and its evolution to today's training system will facilitate a better understanding of what the Army will require to meet future demands.

### **In the Beginning**

The basis for the Army's current training strategies began some twenty years ago. In the 1970s, under the leadership of General William Depuy, the newly formed Training and Doctrine Command (TRADOC) took a systems approach to solving the Army's

training problems. Many diverse, yet related organizations were brought under the control of TRADOC. In addition to the proponent school houses at Ft. Benning, Ft. Knox, Ft. Sill, and others, the Combat Development Command was incorporated into the school system. To further facilitate an integrated effort between related activities, TRADOC also established coordinating centers to include the Logistics Center at Fort Lee and the Combined Arms Center at Ft. Leavenworth.<sup>17</sup> Furthermore, TRADOC advanced the training-developments process, a companion to the combat-developments process, to help commanders train their specific organizations in the field.<sup>18</sup> Using task analysis, TRADOC developed criterion-referenced training, which today is called performance-oriented training (POT). Performance-oriented training requires soldiers and units to compete against a set standard rather than against a curve or a group.<sup>19</sup>

Collective training requirements were defined in a series of Army Training and Evaluation Programs (ARTEP). The ARTEP told the commander what tasks his or her unit should know, under specified conditions and standards.<sup>20</sup> The Army now had a systems approach to training that began with training developments, followed by training and its evaluation using performance-oriented training, and terminating with feedback based on the tasks, conditions, and standards associated with the training event. Commanders now had a basis for determining unit performance and unit readiness.

The first Tank Battalion ARTEP was designed to meet four criteria: (1) evaluate the ability of a battalion task force to perform specific missions under simulated combat conditions; (2) establish unit training objectives with specified tasks, conditions, and standards of performance for combat-critical missions; (3) evaluate the effectiveness of

past training of all echelons of the battalion task force; and, (4) assess future training needs.<sup>21</sup> It was written by the proponent school and included the training and evaluation outlines (T&EOs), specifying the tasks, conditions and standards for all elements of a tank battalion from crew through battalion. The ARTEP was written to facilitate the integration of appropriate tank/mechanized infantry and combat support units, but in its brevity failed adequately to link task relationships. The ARTEP also contained suggestions for integrating field artillery and engineers, but it lacked the tasks, conditions and standards they were expected to meet.

### **Mission Training Plan**

Over the next twenty years the concept of performance-oriented training remained, but the training-task paradigm evolved. Commanders began to play an ever increasing role in determining what constituted mission success. The ARTEP evolved into the present-day Mission Training Plan (MTP). Like the ARTEP, the MTP provides commanders a training and evaluation program for units, and it contains guidance for planning and executing training on critical tasks to wartime standards. But, it is a more complete and better organized document. Training doctrine also evolved, and the MTP became the link between the “how to train” doctrine found in the 25-series manuals and the “how to fight” doctrine found in the appropriate proponent field manuals.<sup>22</sup>

Mission Training Plans became echelon specific, rather than all inclusive. The Tank Battalion MTP includes only those tasks required of the battalion and supporting units assigned to the battalion. Tank company and tank platoon training requirements are listed in separate MTPs. More importantly, the MTP adds a rigor to the analysis of

warfighting not found in the old ARTEP. The MTP provides both a general understanding of how organizations operate as well as detail on how organizations fight. It focuses on the successful completion of operations rather than missions. The Tank Battalion MTP identifies five operations, offensive, defensive, retrograde, reconnaissance and security, and movement to contact, that the tank battalion must be able to perform. While the old ARTEP focused on mission success, the new MTP views missions as the critical collective tasks essential to the success of operations. Accomplishing an operation requires the sequential execution of these specific collective tasks, also known as maneuver tasks. Each operation entails the set of critical collective tasks that must be performed.<sup>23</sup>

The MTP also identifies collective tasks that are performed regardless of the operation. Unlike the maneuver tasks that are operation dependent, these other collective tasks, which apply throughout and are common to all operations, are referred to as operating system tasks. Together, with the maneuver tasks, these task sets make up the seven Battlefield Operating Systems (BOS): perform intelligence operations; perform maneuver; exercise command and control; employ fire support; perform mobility and survivability operations; perform air defense; and perform combat service support operations. The BOS are used to train the various components of the unit.<sup>24</sup> Note that, with the exception of command and control, the BOS are aligned to a proponent (e.g., intelligence is aligned with the Intelligence School at Ft. Huachuca, fire support is aligned with the Artillery School at Ft. Sill, and maneuver is aligned with the Armor and Infantry schools at Ft Knox and Ft. Benning respectively). The proponents also develop

doctrine and determine the tactics, techniques and procedures (TTP) for employing that doctrine. Unfortunately, each proponent tends to create doctrine and TTP independent of the other proponents. This lack of integration tends to stovepipe developments and lies at the heart of the “pseudo” combined-arms nature of today’s training strategies.

### **Recent Developments**

The mission training plan proves a useful tool for conceptualizing combat operations, as well as for planning and executing training. When used in accordance with stated guidelines, it also proves a useful tool for evaluating training and providing feedback on deficiencies, which a unit can strive to eliminate during future training events, such as those at home station. What it has failed to do is serve as a tool that provides the necessary feedback to the army-at-large, a requirement that drives the developments process. This is due, in part, to the paper-based nature of the MTP as a performance assessment tool. Lengthy T&EO checklists discourage rigorous performance data collection and limited automation requires extensive transcribing before it reaches the appropriate agency for analysis. More importantly, the independent nature of the MTP task, with its own set of conditions, makes it difficult to relate to other tasks. This problem is exacerbated at higher echelons where many separate tasks become so interactive that it is impossible to isolate independent conditions.<sup>25</sup> Finally, “the current training and doctrine ARTEP MTPs tend to be stove piped and do not easily support combined-arms training,” a condition fostered by proponency independence.<sup>26</sup>

## **Mission-Oriented Analysis**

The Combat Training Centers, with their unique levels of instrumentation, and with their robust trainer support, provide the necessary tools for useful performance data collection and feedback. The mission training plan task lists, however, provide a collection of individual tasks at the BOS level. This collection yields an exceedingly macro-level amount of information regarding performance effectiveness.<sup>27</sup> The resultant information is too often so general in nature that it is not particularly useful in developing programs to train a unit to perform its mission essential tasks (METL). In an effort to provide a better tool for performance data collection, the Army Research Institute (ARI) embarked on a program to develop a conceptual model for the measurement of unit performance.

The ARI constructed a measurement system that mirrored the training feedback process already in use at the National Training Center (NTC).<sup>28</sup> Reflecting the After Action Review (AAR) process, ARI examined each mission in terms of the planning, preparation, and execution phases as they related to each Battlefield Operating System and by critical task. The feedback process facilitated the development of the framework for conceptualizing the measurement of unit performance, which could then provide appropriate and comprehensive data for follow-on research, studies, analysis, lessons learned, and future training developments.<sup>29</sup>

Mission phases provided a logical flow for all missions and proved useful for organizing the critical tasks and developing a structure for their collective outcomes. A battle flow framework was developed that fully incorporated critical tasks by echelon

(battalion, company, and platoon) and for each mission. The result was a series of mission-oriented, task-taxonomies that were arranged by phase and segment to show critical task sets both sequenced and linked according to their interactive nature.<sup>30</sup>

The utility of this mission-oriented, unit performance measurement system allows for a more comprehensive tactical analysis than other methodologies and can serve as both a source training document and a research document. Because the task analysis process had identified the tasks by mission, the mission rather than the tasks became the central focus for the conditions. Mission-based conditions relieve the analyst from isolating independent conditions. Another advantage of the mission-oriented approach was the intermediate measurement of mission success at the phase-segment level. Phase segments allow for measurement of task groups across BOS. This is especially important when reviewing the interaction of individual tasks across proponents.

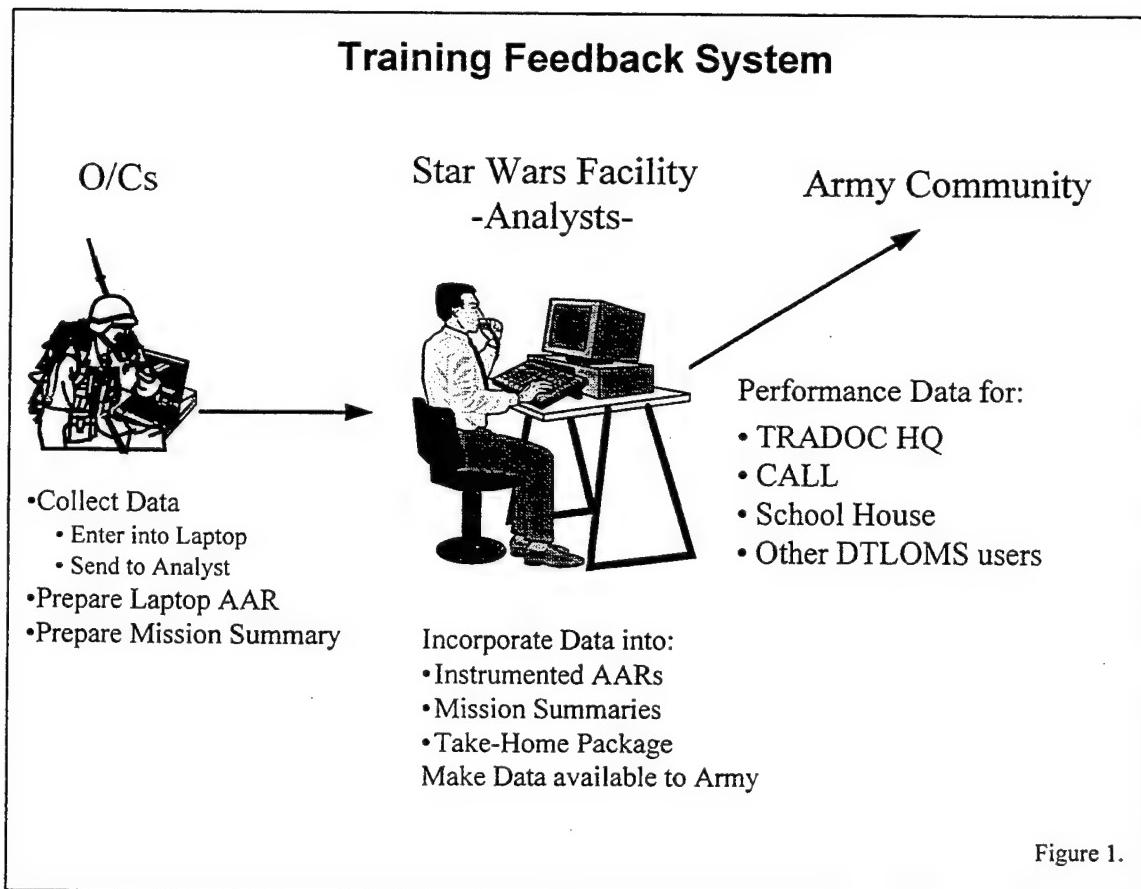
The mission-oriented approach is not free of shortcomings. It is a rigid taxonomy that, while mapping the doctrinal approach to major missions, does not allow for the inclusion of other tasks for measurement as a part of that mission. Another problem with this approach is the cost of developing a mission-oriented approach for every type unit, at each echelon, and for each mission. There is also a potential problem for the training developer using this approach as it provides “overly fine-grained” information regarding task performance. Finally, the mission-oriented approach requires an incredible amount of information to be collected. Unlike an MTP generated task list that could require as few as six maneuver tasks for a battalion/task force attack mission,<sup>31</sup> the same mission, using the mission-oriented approach, requires the collection against 108 tasks.<sup>32</sup>

## **Automating the Approach**

The ARI solution for collecting the plethora of performance data required of the mission-oriented approach was the Electronic Collection Instrument (ECI).<sup>33</sup> While the Army Research Institute saw the ECI as a reliable system that met user needs,<sup>34</sup> the Observer/Controllers (O/Cs) at the Combat Maneuver Training Center (CMTC) saw it in a different light. For them “the new system was complex, cumbersome to assemble, and, once ‘booted,’ forced the user to navigate at a snail’s pace through a bewildering labyrinth of busy, information-laden screens.”<sup>35</sup>

Not to be discouraged by the shortcomings of ECI, the CMTC’s Grizzly Task Force O/C team set about designing and developing its own collection instrument, a system that became known as the Training Feedback System (TFS). Designed using an off-the-shelf database management system, the TFS allowed observer/controllers to access the mission-oriented task lists; to review each task individually by task name, task standard, and subordinate task elements; to enter comments on the performance of that task; to save it to the database; and, at the end of the mission to transfer the comments to either the word processor or to the presentation program where the information could be edited for an AAR product. After some trial and error, the program worked very effectively. It simplified the performance-data collection process and streamlined it by removing a lengthy step in the discussion phase of the collection process. Moreover, it standardized the collection process by measuring like units, performing like missions, with a common metric.

By using TFS to standardize the performance metric with the mission-oriented task paradigm and to automate data collection, trainers could now aggregate standardized, performance-data across a series of unit rotations. By holding the data collection process constant, analyses of these data promised to produce more statistically valid lessons-learned. Expanding the process also showed promise for providing more direct access of performance data from the O/C, to the training center's central collection facility, and then to the Army at large to assist in the requirements process (see figure 1).



O/Cs found early that, by themselves, the mission-oriented task lists were insufficient for a unit rotation. Some critical combat mission tasks were missing and attached units, such as engineers and air defense units, were not well represented by the

ARI task lists. Furthermore, there were no mission-oriented task lists for the Peace Keeping mission each unit performed. The TFS alleviated the problem by including a digital version of the most common unit's (e.g., Tank Battalion/Task Force) MTP T&EO. By formatting the digital T&EO in the same fashion as the mission-oriented task lists, the O/C could access those critical tasks not found in the mission-oriented task lists. TFS capability was further expanded by including the MTP T&EOs of habitually cross-attached units ( e.g., engineer company and air defense platoon). Finally, CMTC incorporated the Operations Other Than War (OOTW) T&EO that had been developed at CMTC during the early 1990s. The O/C now had an electronic performance-data collection tool that could be used to record performance on any task performed by any tank or mechanized task force exercising at the CMTC.

In respect to the TFS task list customization feature, the O/C could select only those tasks appropriate for a specific mission or associated with a particular battlefield operating system (BOS). This feature allowed each O/C to focus effort on only those tasks requiring their attention and expertise, while allowing the team to aggregate the tasks at mission's end for higher level AAR products. The CMTC also customized TFS for a V Corps exercise when the corps practiced a contingency plan involving a noncombatant evacuation operation (NEO) in the former Yugoslavia.<sup>36</sup> The O/Cs designed another customized version of TFS to support platoon through battalion level units involved in Operation Joint Endeavor.<sup>37</sup>

While the TFS proved productive at the training center, it also showed promise for commanders. The mission-oriented task lists could be used to train staffs in the

critical tasks associated with the unit's primary missions, something that MTP tasks did not effectively accomplish. The O/Cs had effectively used the TFS with each unit during their constructive simulation missions at the beginning of each rotation. The same capability existed for use at home station where units often engaged in constructive and virtual exercises. TFS and the mission-oriented task lists promised to bridge the gap between training and training performance collection and feedback at home station and the training centers.

The Training Feedback System and the mission-oriented approach to training provided an hitherto unavailable capability to the Combat Maneuver Training Center (CMTC). But, as indicated earlier, the mission-oriented approach did have its shortcomings. The greatest shortcoming experienced at CMTC was the lack of a set of task lists for anything other than the tank and mechanized task force and its subordinate units. The brigade headquarters, direct support artillery battalion, forward support battalion, supporting engineer battalion and aviation battalion had no such mission-oriented task paradigm available to either O/C or unit to assist in training and training performance collection. Consideration was given to modifying existing lists, but to do so was entirely beyond the scope of available expertise, and the Army Research Institute had neither funding nor plans to expand the scope of what already existed. Fortunately another task analysis initiative, also under the supervisory direction of the ARI, was underway that scrutinized the work of staffs in organizations at battalion level and above.

## **Functional Approach to Task Analysis**

Significant formal and informal analysis by ARI of feedback on performance following training exercises in units and at the CTCs suggested that an additional level of feedback might be useful in describing the outcomes. In many cases, the feedback following a major exercise focused at the level of the Battlefield Operating System. As described earlier, comments on performance at this “macro” level of detail provide a general impression of the outcome. So general an impression makes it difficult to determine the activities that were done well, those that needed improvement, and the follow-up actions a unit should take after the completion of an exercise rotation. On the other hand, feedback given at the task level of detail, should it be a collection of MTP tasks or mission-oriented tasks, is difficult to grasp due to the amount of detail and comments on a multitude of issues. THE ARI considered an intermediate level of feedback, somewhere between the BOS level and the task level of detail. This new, intermediate approach was seen as more meaningful and having application in several areas:<sup>38</sup>

First, in terms of After Action Reviews and training feedback, it would be easier to visualize a plan of corrective action aimed at training outcomes from an intermediate level of description. Second, trendline analyses completed at a level between a BOS and a task would provide information that would be extremely useful and easy to relate to the battlefield. Finally, a level of training description and analysis appropriate for training feedback and trendline analyses would also be effective for building combined arms training programs.<sup>39</sup>

Unlike other task analyses, the functional approach to training is based on the assumption that an effective way to train a combined-arms task force is to focus on a function (or set of functions) comprised of specific tasks and their associated outcomes

applied across mission types rather than to specific missions.<sup>40</sup> After considering various alternatives to developing the functional approach, THE ARI adopted a framework based on the “Blueprint of the Battlefield” (TRADOC pam 11-9). Tasks, and sets of tasks, making up the functions were determined by subdividing the BOS into related subsystems, and applying the CTC information-organization process for AARs. THE ARI also considered the projected utility of databases of elements associated with DTLOMS for trendline analysis that would satisfy the requirements process. The process outcome produced an initial list of thirty functions initially termed “sub-BOS.” Further analysis resulted in thirty-nine functions termed Critical Combat Functions (CCF), all associated with the tactical level of war.<sup>41</sup>

The first step of the CCF development was focused on defining those CCFs relevant to an armor or mechanized task force at the battalion-level. THE ARI incorporated, in a procedure resembling the mission-oriented approach, the battle phases of plan, prepare and execute into the task analysis so as to ensure that the products followed the flow of the battle. As in the mission-oriented approach, tasks were defined independent of specific conditions; instead, conditions were tied to each function or specific groupings of functions.

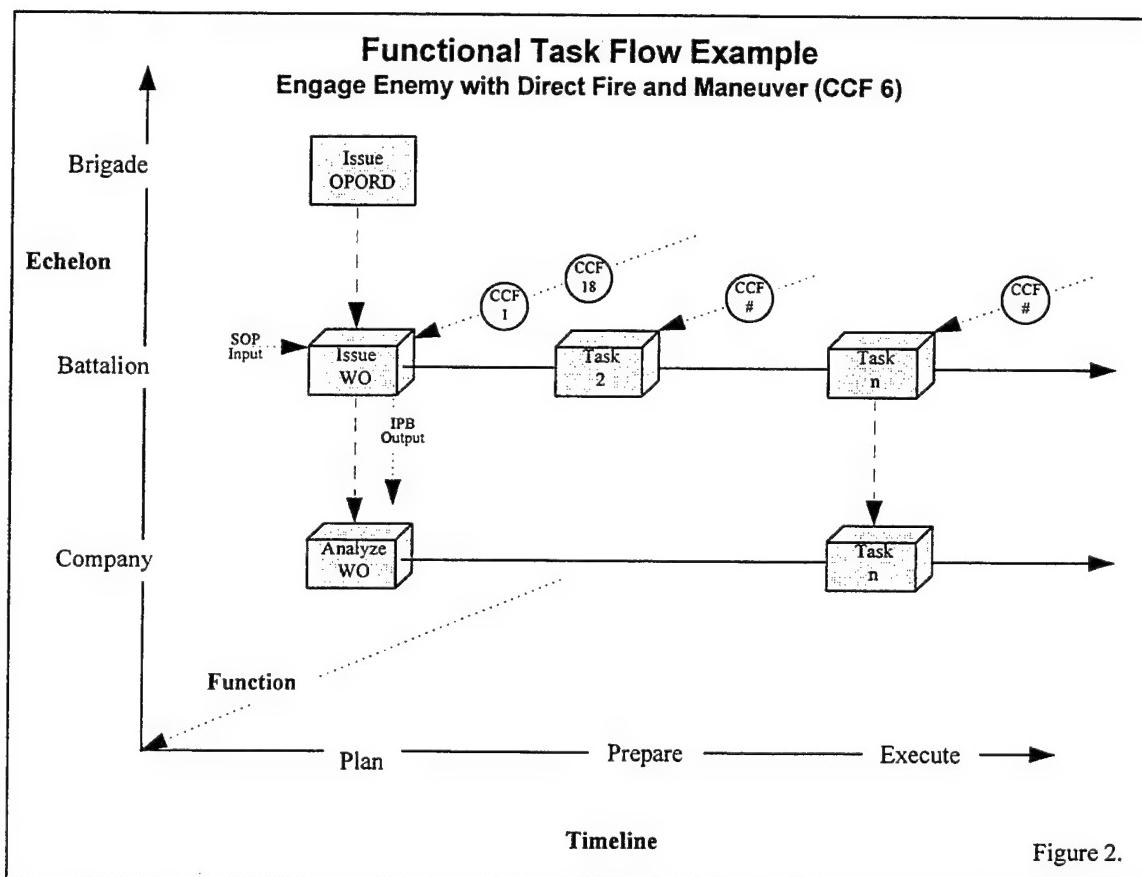
When completed, the functional approach provided the potential for significant contributions to unit collective training and to those involved in the requirements process. The functional approach provided many products not associated with other task paradigms. One critical component identified the responsibilities of key participants across echelons of the combined-arms task force for a given task or task element.

“Key inputs and outputs” constituted another critical component related to participant success. Inputs and outputs described the information and products required of CCF participants to complete tasks, and information and products that are produced as outputs of the tasks performed. They also provided the basis for integrating and linking major sequences of activity across the battle phases, BOSSs, and echelons by identifying requirements for information or products.<sup>42</sup>

An example of a battalion-level, key input, required during the planning process, is the task force standing operating procedure (SOP). Among other things the SOP identifies pre-combat checklists, basic formations and movement techniques, report formats, and procedures for assembly areas, attack positions, and resupply. SOPs also govern direct and indirect fire control measures as well as actions-on-contact. As an input, the SOP has a direct impact on the information contained in the Warning Order (WO) issued to subordinate units. An example of a key output, required during the same time frame, is the refinement of the task force Intelligence Preparation of the Battlefield (IPB) products. These products are refined to address factors relative to the company/team. Products include among other things, situation templates, terrain and weather analysis, and Priority Intelligence Requirements (PIR). This output is a result of the work the S2 and other battalion staff members accomplish in order to assist the company/team with its task requirements.

Plausibly the most significant feature of the functional approach is the horizontal task linkages between the BOSSs for a given echelon and the vertical task linkages between the echelons. The framework created by these linkages helps to visualize the

pathways for the exchange of products and information which can result in synchronization of forces (see Figure 2). This framework also helps to identify when information or product inputs and outputs are interrupted or not exchanged, or when certain linkages fail to take place, resulting in reduced or negative levels of synchronization.<sup>43</sup>



The flow chart in figure two shows the horizontal linkage between the brigade OPORD, the battalion WO, and the company/team WO-analysis task. One can also see the SOP input and the IPB output at the battalion level. Task input from CCFs 1 and 18 also provide information necessary to accomplish the battalion WO task. When done correctly these inputs and tasks will positively impact the WO task. Should one or more

of these inputs fail to take place, the quality of the WO task will be affected. A poor quality WO will potentially affect subordinate tasks (in this case the WO analysis) and follow-on battalion tasks. In any case, the trainer can trace the breakdown in information transfer by tracking task accomplishment as depicted in the flow chart.

In summary, the functional approach generally and the CCF task analyses specifically prove useful for a variety of reasons. They are useful to trainers, training developers, and force designers because they identify the following: principal participants; interaction with higher, lower, and adjacent headquarters; information required by the task force (TF) headquarters in order to accomplish the function; other information that the TF must produce so that subordinate elements can perform their tasks; the interaction and relationship with other CCFs; necessary subordinate proficiencies; and relevant lessons from the Center for Army Lessons Learned (CALL) and other customers.<sup>44</sup>

The functional approach, as with the formerly discussed task analysis techniques, suffers from certain shortcomings. Although the most robust of the task paradigms, its very robustness will require automation (perhaps a system similar to TFS) to be useful. Manual preparation and use of this technique to collect, analyze and feedback information is prohibitive. The CCF approach is a resource intensive approach to task analysis. Having been in development for more than two years, only those functions associated with the tank and mechanized task force have been completed, although the brigade and supporting battalion command and control functions have been framed. It will take a great deal more time to complete the task analyses through the division level, and only

for combat operations. Finally, the analyses have been done in the context of Army combined-arms operations. There has been little or no attention directed to joint and combined operations, although functions such as employ close air support (CCF 9) and employ naval gun fire (CCF 14) have been either determined or identified as necessary.

### **Conclusion**

Ever since the creation of the Army's Training and Doctrine Command, the Army has taken a systems approach to training and warfighting. By focusing on a known threat, the Army was able to organize, equip and train itself to deal with the threat. As doctrine evolved so did the training system to support the execution of that doctrine. A detailed analysis of how organizations operate and fight led to a sophisticated training management system for preparing organizations, and a better understanding of combined-arms operations led to the need for better training strategies and the task paradigms to support those strategies.

The Army's shift to performance oriented training after the Vietnam War, brought with it the requirement to train to a standard. The first post-Vietnam collective training strategies focused on tasks that were either mission or operations based, with specific conditions and standards to measure unit performance and readiness. These early collective training strategies were adequate for meeting core competencies, but they lacked the structure and rigor needed to measure the ancillary tasks that contributed to unit success. Mission-oriented and functional approaches to task analysis have provided capabilities in performance measurement that were not available with early ARTEP and current MTP techniques. Besides measuring and providing feedback to the training

organization, these newer techniques, with the aid of automation, are capable of providing the Army with the information necessary for the "requirements determination" process.

Current task paradigms, however, are limited in their application. The focus of recent task analysis techniques is heavy tank and mechanized infantry battalion task forces operating in the upper end of the conflict spectrum. Future operations require a more versatile technique. Future operations call for joint task force organizations, task organized to meet operational requirements anywhere along the conflict spectrum. This means that future army organizations anywhere from the smallest team or squad to the highest echelons must operate with other services. Furthermore, they must train with other services in order to prepare adequately for operations along the conflict continuum.

Forthcoming training systems promise to assist in preparing units to meet operational requirements. Commanders at all levels need a more robust and sophisticated set of training options to include live operations and exercises supported by constructive and interactive, virtual simulations, all based on a new family of training devices, simulations and simulators.<sup>45</sup> Future performance measurement system(s) must accommodate both the significant changes to the military's operational philosophy and the supporting training system. In essence, future Army training-task paradigms must do three things. First, they must support combined-arms training strategies. Second, they must help training, combat, and material developers define requirements for new equipment and systems. Finally, they must support the integration of joint and service METLs.<sup>46</sup>

## **Recommendations**

Recent, functional approaches to task analysis provide extraordinary latitude to creating and managing combined-arms strategies. Recent automation efforts that have incorporated mission-oriented and task based strategies have also shown promise for collecting the performance data needed by training, combat, and material developers during requirements development. What is lacking is an approach to training that will accommodate operating and training in a joint environment.

The current, functional approach to training is centered around the Army's BOS. However, "emphasis on joint operations suggests a need for research along such functional lines to identify the functional dependencies between the commander, the staff, and the components of a Joint Task Force so as to permit training in operations other than war and the other forms of contingency operations, joint and combined which are emerging as important...."<sup>47</sup> Another important aspect of this research is that it "... is not only feasible but desirable to plan not only joint training exercises, but also service training exercises. The research is necessary also for the development of joint doctrine and the design of simulations for use in training joint operations and interoperability."<sup>48</sup>

One possible framework for conducting this research is to tailor the joint functional approach to the Army Universal Task List (AUTL). The AUTL follows a similar hierarchical structure to the *Blueprint for the Tactical Level of War*, that identifies the Battlefield Operating Systems.<sup>49</sup> Each is based on a tactical level set of tasks subordinate, but linked to the operational level and with an operational level set of tasks linked to the strategic level. Rather than seven BOS the AUTL is organized by six task

areas. These six task areas, however, reflect the changes in thought of how the armed forces of today and tomorrow will fight. Although emphasis is on Army tasks at the tactical level, the AUTL includes tasks performed by other services. This functional breakout keeps the task areas from representing any particular Army branch or proponent and instead applies to any type of organization.

The first task area, deploy/conduct maneuver, includes the requirement to get to an area of operations. It includes those functional groupings of tasks identified with the maneuver BOS, but also includes the mobility and counter mobility functions associated with the mobility and survivability BOS. The linking of these functional groups helps in creating the linkages desirable in the Army's future combined-arms training strategies. The first task area also relates to all organizations or forces associated with the function (e.g., light forces, attack helicopter forces, and support forces, as well as heavy tank and mechanized forces). The *control/dominate battle space* function has been expanded to meet the intent of *JV 2010* and *AV 2010*.

A number of the task areas to include *develop intelligence, perform logistics and combat service support*, and *exercise command and control* are very similar to their BOS counterparts. Other BOS and critical combat function related tasks have been combined and organized under the *protect the force* task area. Air defense as well as survivability functions are found in this task area. The arrangement of tasks found in the *protect the force* task area especially reflect current thought in the execution of operations associated with the lower end of the conflict continuum.

The Army Universal Task List has great potential in laying the foundation for a joint-based functional approach to training. To lay this foundation, the vertical and

horizontal relationships must be analyzed and documented from the highest to the lowest possible organizational level. Developing these links, and their relationships, allows for the insertion or removal of organizations based on the requirements of the operation. The same goes for flattening the organizational structure, when a streamlined command and control hierarchy is desirable. Further analysis associated with the AUTL will lead to modifications in the functional approach as doctrine and the nation's strategy evolves.

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## ENDNOTES

<sup>1</sup>Patrick Clawson, ed., Strategic Assessment 1996: Instruments of US Power (Ft. McNair, Washington D.C.: National Defense University Press, 1996), 221-224.

<sup>2</sup>John M. Shalikashvili, National Military Strategy of the United States of America (Washington: Chairman of the Joint Chiefs of Staff, 1995), 4-5.

<sup>3</sup>Ibid., 18-19.

<sup>4</sup>John M. Shalikashvili, Joint Vision 2010 (Washington: Chairman of the Joint Chiefs of Staff, 1996), 4-5.

<sup>5</sup>Ibid., 7.

<sup>6</sup>Dennis J Reimer, Army Vision 2010 (Washington: Chief of Staff, United States Army, 1996), 1.

<sup>7</sup>William W. Hartzog, Requirements Determination (Fort Monroe, VA: Commander, U.S. Army Training and Doctrine Command, 1996), 4-5.

<sup>8</sup>Hans Binnendijk, "A Strategic Assessment for the 21st Century," Joint Forces Quarterly, (Autumn 96): 68.

<sup>9</sup>In March 1996, Task Force 2-63 Armor deployed to Macedonia for six months as part of Operation Able Sentry. A UN peacekeeping operation, Operation Able Sentry requires a light infantry battalion to meet mission requirements. Because of operations in Bosnia-Herzegovinia (Joint Endeavor), all available infantry units (mechanized and light) in Europe were committed.

<sup>10</sup>Reimer, 6.

<sup>11</sup>William W. Hartzog, OPORD 1-95 (WARFIGHTER XXI) (Fort Monroe, VA: Commander, U.S. Army Training and Doctrine Command, 23 October 1995), 3

<sup>12</sup>Ibid.

<sup>13</sup>Ibid., 5.

<sup>14</sup>Ibid.

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<sup>15</sup> Ibid.

<sup>16</sup> Ibid.

<sup>17</sup> William E. Depuy and Paul Gorman, "Training Developments," transcript take from a television tape, "TRADOC Mission and Resources Briefing," (Ft. Monroe, VA: U.S. Army Training and Doctrine Command, 1975), 1-2.

<sup>18</sup> Ibid., 3.

<sup>19</sup> William E. Depuy, The Army Training System (Ft. Monroe, VA: U.S. Army Training and Doctrine Command, 1978), 3-5.

<sup>20</sup> Ibid., 11.

<sup>21</sup> Department of the Army, ARTEP 17-35. Army Training and Evaluation Program for Tank Battalion and Combined Arms Task Force (Fort Knox, KY: U.S. Army Armor School, August 1975), 3.

<sup>22</sup> Department of the Army, ARTEP 17-12-MTP. Mission Training Plan for the Tank and Mechanized Battalion Task Force. (Fort Knox, KY: U.S. Army Armor School, August 1988), 1-1.

<sup>23</sup> Ibid., Table 2-1.

<sup>24</sup> Department of the Army, Training the Force, Field Manual 25-100 (Washington: U.S. Department of the Army, 15 November 1988), 2-4.

<sup>25</sup> Thomas Lewman, William J. Mullen III, and James Root, "A Conceptual Framework for measuring Unit Performance," Determinates of Effective Unit Performance: Research on Measuring and Managing Unit Training Readiness, ed. Robert F. Holz, Jack J. Hiller, and Howard H. McFann, (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, July 1994), 28.

<sup>26</sup> Army Research Institute, "The Functional Approach to Training Design and Development," ARI Newsletter, (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, Spring 1996) 13.

<sup>27</sup> Ibid., 34.

<sup>28</sup> Ibid., 20.

<sup>29</sup> Ibid.

<sup>30</sup> Ibid., 29-32.

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<sup>31</sup> ARTEP 17-12-MTP, 2-3.

<sup>32</sup> Department of the Army, Combined Arms Battle Tasks: Battalion Task Force - Deliberate Attack (Alexandria, VA: U.S. Army Research Institute, January 1, 1994), 6.

<sup>33</sup> Micheal R. McClusky, Final Technical Report and Software Documentation (Presidio of Monterey, CA: U.S. Army Research Institute, January 1, 1994), 1.

<sup>34</sup> Ibid., 13.

<sup>35</sup> Karl J Gunzelman, "The Training Feedback System Story," proposed article sent to Center for Army Lessons Learned. 11 November 1996, 2-3.

<sup>36</sup> The original TFS was reconfigured to capture the performance data of the 3/325 ABCT during exercise Mountain Shield. It took programmers less than twelve hours to reprogram TFS to capture performance information at brigade, battalion, and company levels.

<sup>37</sup> A beta version of an "operations other than war" TFS was developed but never adopted. The primary reason, at the time, was a lack of automation support the former Yugoslavia.

<sup>38</sup> "Functional Approach to Training," linked from Army Research Institute. at <<http://www.ari.fed.us/>>, 6 September 1996.

<sup>39</sup>Ibid.

<sup>40</sup>ARI, 10.

<sup>41</sup> Ibid., 10-11.

<sup>42</sup> Functional Approach to Training.

<sup>43</sup> Ibid.

<sup>44</sup> Lewman, 35-36.

<sup>45</sup> Gordon R. Sullivan and James M. Dubik, "Information Age," Military Review, April 1994, 60.

<sup>46</sup> William W. Hartzog, OPORD 1-95 (WARFIGHTER XXI). 5-6.

<sup>47</sup> Lewman, 37-38.

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<sup>48</sup> Lewman, 38.

<sup>49</sup> "Universal Joint Task List, Version 3.0," CJCSM 3500.04A, 13 September 96.